The Ballarat Naturalist
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Friday 2nd June "MYCOmmunity: Applied Mycology"

Ema Corro is a mycologist, and president and co-founder of MYCOmmunity, a not-for-profit organisation that aims to increase public awareness about fungi. Ema is also currently undertaking a Masters of Environmental Science and Management – Ecology.

Ema presented an update on some of the conservation and ecology projects being undertaken by MYCOmmunity. The organisation offers short courses, conducts research and ecological surveys, and provides opportunities for citizen scientists to be involved in fungi conservation. They also have a Mycelium Lab, bringing scientific resources for culturing, growing, and DNA testing of fungi to the community.

In 2019, MYCOmmunity initiated the Wild Fungi DNA Project in efforts to make DNA sequencing and technology available for citizen scientists in Australia and to others who may benefit, such as landcare organisations. MYCOmmunity recognised that many fungi samples were being sent overseas, which is a biosecurity hazard, and doing so without permits, which rendered the data unusable.

Understanding Australian native fungi is essential, given how little is known about it. Only 5% percent of the estimated 250,000 species

Ramaria capitata var. ochraceosalmonicolor photographed by Carol Hall on our field trip.

have even been described. In most cases their life-cycle, including generation length, and frequency and triggers of fruiting, are not well understood. This makes it extremely difficult to monitor them and to know how they are impacted environmentally.

Much of the data collection by citizen scientists relies on finding fruiting bodies (mushrooms), with data largely comprising of images uploaded to Fungi Map and the Atlas of Living Australia. Environmental DNA (eDNA) offers the significant advantage of being found in soil, litter and other environmental samples, providing a more accurate assessment of the presence of fungi in the environment. eDNA testing has also become more affordable. The Wild Fungi DNA Project is developing protocols and training citizen scientists to use eDNA to develop baseline data for specimen comparison, and to identify fungi. This data will be used to protect the habitats of endangered fungi, as well as to improve land management procedures.

Ema and others have also been conducting a Tree Fall Survey in three different parts of Wombat State Forest where trees were damaged in varying degrees during 2021. Soil samples have been collected to investigate how the fungi is changing in response to the storm damage. (FNCB member Andy Arnold recommended Ron Hateley's book: *The Victorian Bush: its 'original and natural' condition* as a valuable resource for understanding the impact of cyclonic storm damage on our forests and woodlands.)

Two other projects briefly mentioned by Ema were the designing of Loop Mediated Isothermal Amplification (LAMP) primers to find new individuals and populations of Australia's most critically endangered fungus, Tea Tree Fingers (*Hypocreopsis amplectens*) and to see how far mycelium extends in wood, as well as using testing to investigate what species of fungi are present in native animal scats.

Ema's sharing of her time and expertise was greatly appreciated, both through her presentation on Friday and her contribution to the fungi excursion on Sunday.

Sheree Cartledge

Wombat Fungi Foray

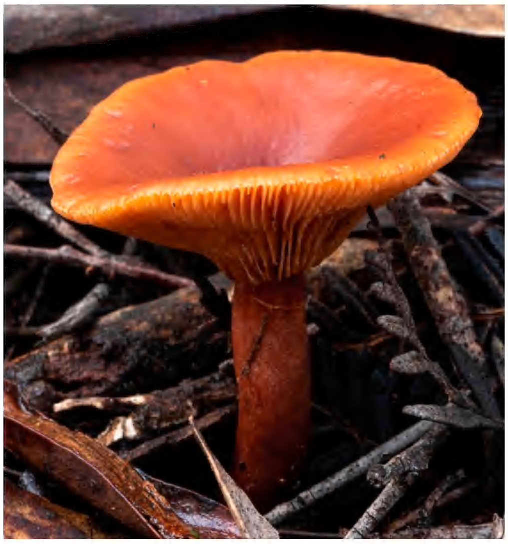
We were fortunate to have fine, sunny but cool weather for our fungi excursion to two sites in the Wombat Forest. The first place we visited was along The Great Dividing Trail near Cairns Road, Korweinguboora. The vegetation in this damp area was mostly Messmate and Blackwood trees with an understory of Prickly Moses wattle, Daisy Bushes, Hop Bushes, Bracken, Fishbone Ferns and sedges with moss covered logs in shadier places. The elevation here and at our next site is about 640 metres above sea level.

Near where we parked our cars we found again this year some Orange Peel fungus *Aleuria aurantia.* The fertile surface of this fungus is on the upper side and will expel a cloud of white spores when breathed on. A clump of reddish- brown Brick Caps *Hypholoma australe* was on buried wood. Sulphur Tufts *Hypholoma fasciculare* were seen later. Noticed was *Conocybe filiaris* with an orange cone shaped cap about 12mm wide on a tall thin stem with a small annulus halfway down the stem.

The White Jelly Fungus *Tremella fuciformis* was seen on fallen logs. (photo at left).

A small brown specimen of a bracket fungus *Ganoderma australe* with a white underneath was seen on a stump. This specimen was only 50mm wide. Some specimens can be up to 500mm or larger across. The white undersurface will bruise brown if marked and that has led to the common name “Artist’s Conk”.

Numerous *Russula* fruit bodies were seen on the day. The fruit bodies are brittle and often prone to be damaged by being eaten by wallabies and slugs. The colours of the caps and stems can change with age. One distinguishing feature of most *Russula* species is that all the gills are equal length from the rim to the stem. The bright red-capped *Russula persanguinea* with a white stem and white gills was the first *Russula* species seen. Also in the *Russulacea* family is the locally common rusty-brown *Lactarius eucalypti* (photo at left) with a cap to 50mm and decurrent tan gills that can exude tiny white droplets of latex.

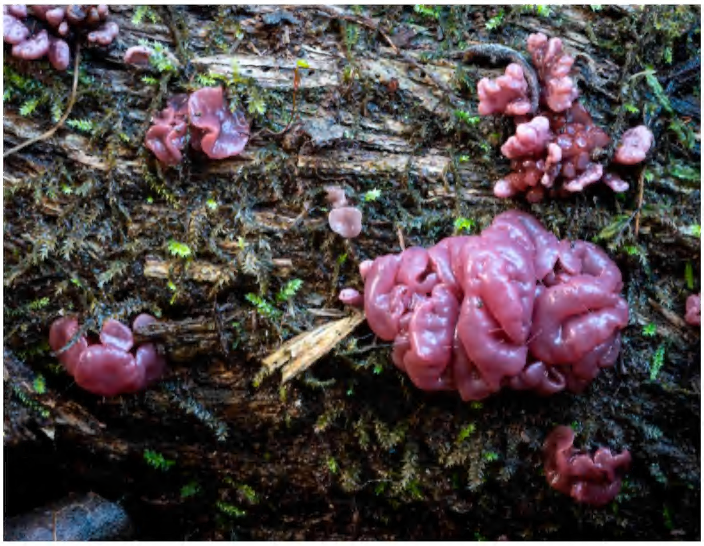


From above it looks somewhat like *Laccaria* species. On *Laccaria* species the distant spaced gills are not decurrent down the stem.

A few Waxcaps in the *Hygrophoracaea* family were seen. The lemon-coloured fruit bodies of *Glioxanthomyces chromolimonea* were hard to miss among the litter. Near the track were the Splitting White Waxcap *Humidicutis mavis.* The caps of this species tend to split with age. Some now orange coloured cone shaped caps of a *Hygrocybe* species were examined. A week prior to our club foray the caps were red.

Members were pleased when they spotted the blue Pixies Parasols *Mycena interrupta* on a log. Some other *Mycenas* included the blackish-brown *M. nargan* atop a stump, the wood inhabiting *M. subgalericulata,* and the tall *M. cystidiosa* among the litter on the ground. A large colony of *Mycena maldea* (not *Mycena albidocapillaris* as wrongly suggested on the day), was all along the peeling bark of a Messmate. The thin stemmed Horse-hair fungus *Marasmius crinis-equi*. was among the litter.

The Purple Jelly drops *Ascocorynne sarcoides* were along a thin log on the ground (photo at right).



Nearby tiny glutinous yellow spikes were seen on a tiny twig and an algae covered clod of soil. With the aid of hand lens the plasmodia of a Slime Mould could be seen about to change into sporangium. Two days later, pin shaped sporatheca about 0.5mm wide, and which contain the spores, had formed on minute 2mm stems. The sporotheca were now a dull yellow and a day later changed to a dark colour.

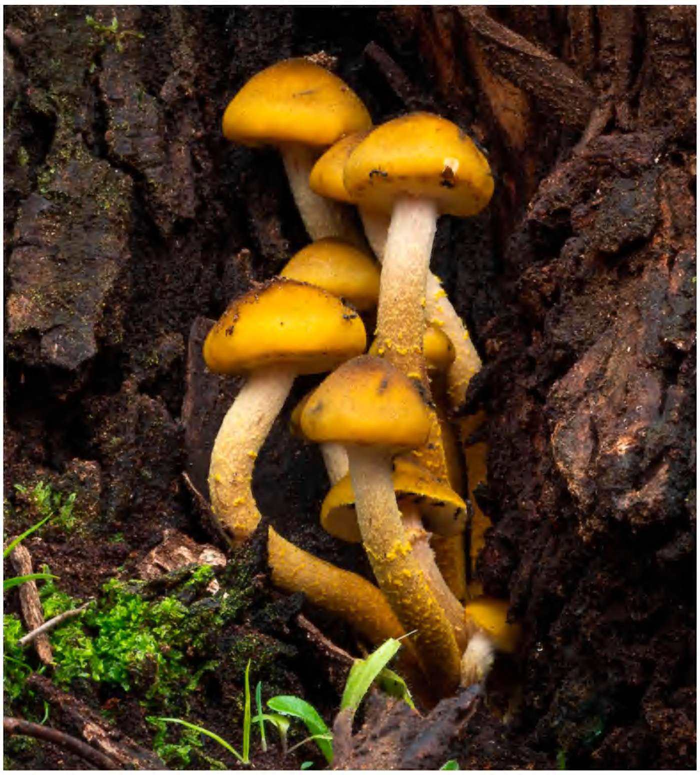
After lunch at the Moorabool Reservoir picnic ground, we travelled to Slaters Rd, Mollongghip. Manna Gum, Messmate, Blackwood and a few Cherry Ballarts are the main tree species there, with not a lot of under storey plants. There is some bracken, narrow-leaf wattle, Pink Heath and *Grevillea repens*. The first bolete for the day was the Rhubarb Bolete *Boletellus obscurecoccineus* with a deep pink cap and pink stem on wood and bright yellow pored surface.

We saw a lot of Webcaps including the purple-capped *Cortinarius archeri,* the green *C. austrovenuta*, the slimy yellow *C.sinapicolor,* the orange-red *C. austrocinnabarinus* and the white *C. austroalbidus.* When immature, Cortinars have a cobwebby partial veil below the cap that protects the developing gills. When the cap expands the veil breaks away from the rim and falls, creating one or more brown bands around the stem. The brown colour is the result of *Cortinar's* brown spores falling on the intact partial veil.

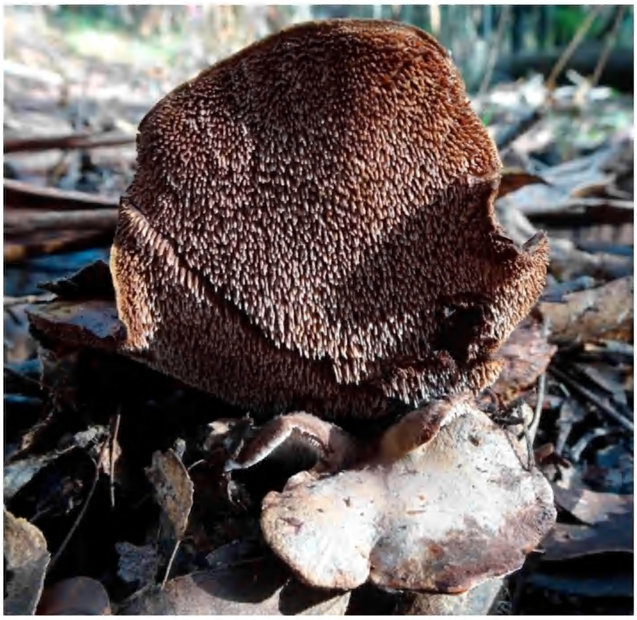
The purple capped and cream gilled R*ussula pupureoflava* was added to our list. Another Russula was *R.rosea* with red cap and red stem.

Other fungi seen in this spot included the parasitic Honey Fungus *Armillaria luteobubalina* that was seen in a crack in the base of a large Messmate tree (photo at right). The Honey in the common name refers to the colour of the fungus, not the taste.

Several coral species were seen. Ones



identified included the salmon coloured *Ramaria capitata var. ochraceosalmonicolor* (photo on the front page) that has branches ending in rounded tips. Another coral was the pink-lilac branched *R.aff versatilis.* The substrate for Ramarias is usually soil. One coral seen that is always on wood is the whitish fine branched *Artomyces colensoi*. The candelabra shaped form has fine branches that end in a crown shape tip.



Vireya found a fungus with a dark brown cap with spines underneath instead of the usual gills or pores. The spines were about 5mm long. This was an old specimen and part of the cap had been overturned (photo at left). This is a rare *Sarcodon* species. The last report of this genus in the Wombat forest was at Lyonville in April 2011. There has been a suggestion that *Sarcodon* fruitbodies only appear after wet years.

The Wombat Forest proved again to be a good spot at this time of the year to see many species without having to walk very far.

Les Hanrahan

All photos by Carol Hall, except the Sarcodon photo by Vireya Jacquard.

A note about the FNCB iNaturalist project:

After each field trip, a journal post is published which includes a link to all the observations made on the day. The Fungi Foray resulted in 163 observations of 94 species (so far), of fungi, plants, insects and birds, contributed by 7 of the participants in the trip.

To see all the observations visit our project:
https://www.inaturalist.org/projects/fncb-inaturalist

Scroll down to the Journal section to access this and all previous posts.

List of all fungi species found on our field trip.

Amanita	*ochrophylla*
Armillaria	*luteobubalina*
Artomyces	*colensoi*
Ascocoryne	*sarcoides*
Austropaxillus	*infundiliformis*
Boletellus	*obscurecoccineus*
Cortinarius	*archeri*
Cortinarius	*austrocinnabarinus*
Cortinarius	*austrovenutus*
Cortinarius	*persplendidus*
Cortinarius	*sinapicolor*
Crepidotus	*eucalyptorum*
Crepidotus	*crocophyllus*
Crepidotus	*variabilis*
Galerina	*hypnorum*
Geastrum	*triplex*
Gloioxanthomyces	*chromolimonea*
Gymnopilus	*eucalyptorum*
Heterotextus	*peziziformis*
Humidicutis	*mavis*
Hygrocybe	*sp.*
Hypholoma	*australe*
Hypholoma	*brunneum*
Hypholoma	*fasciculare*
Laccaria	*laccata*
Laccaria	*sp.*
Lactarius	*eucalypti*
Lichenomphalia	*chromacea*
Lichenomphalia	*umbellifera*
Marasmius	*crinis-equi*
Mycena	*albidofusca*
Mycena	*austrofilopes*
Mycena	*cystidiosa*
Mycena	*kuurkacea*
Mycena	*malawaestris*
Mycena	*nargan*
Mycena	*subgalericulata*
Mycena	*subvulgaris*
Mycena	*vinacea*
Protostropharia	*semiglobata*
Psilocybe	*subaeruginosa*
Pholiota	*squarrosipes*
Ramaria	*capitata var. ochraceoslmonicolor*
Ramaria	*lorithamnus*
Ramaria	*aff.versatis*
Russula	*clelandii*
Russula	*purpureoflava*
Russula	*persanguinea*
Sarcodon	*sp.*
Scleroderma	*cepa*
Stereum	*illudens*
Stereum	*versicolor*
Trametes	*versicolor*
Tremella	*fuciformis*
Tricholoma	*eucalyptorum*

Postcard from Kangaroo Island – Part 1 Naracoorte Caves.

After an attempt to visit the third largest of Australia's offshore islands in October 2022, Kathy and I finally got to Kangaroo Island in March 2023. Our itinerary included stops at Naracoorte Caves, visiting relatives and friends at Coonalpyn, Adelaide and Maslin Beach plus overnight stays at Kingston SE and Casterton on the way home. So, this postcard is from the first third of the trip with other ones following in future months.

We left home in Scarsdale and travelled along the B160 to Dunkeld at the southern tip of the Grampians. Highlight of the morning was sighting 2 Brolgas about 5 kms west of Skipton. At Lake Bolac we spotted a Swamp Harrier hovering over the lake. Otherwise, the most sighted birds along the way were Ravens and Magpies. We travelled west through Harrow and Edenhope, crossing the border into South Australia at 2.30 pm and found our phone clocks changed automatically to 2.00 pm!

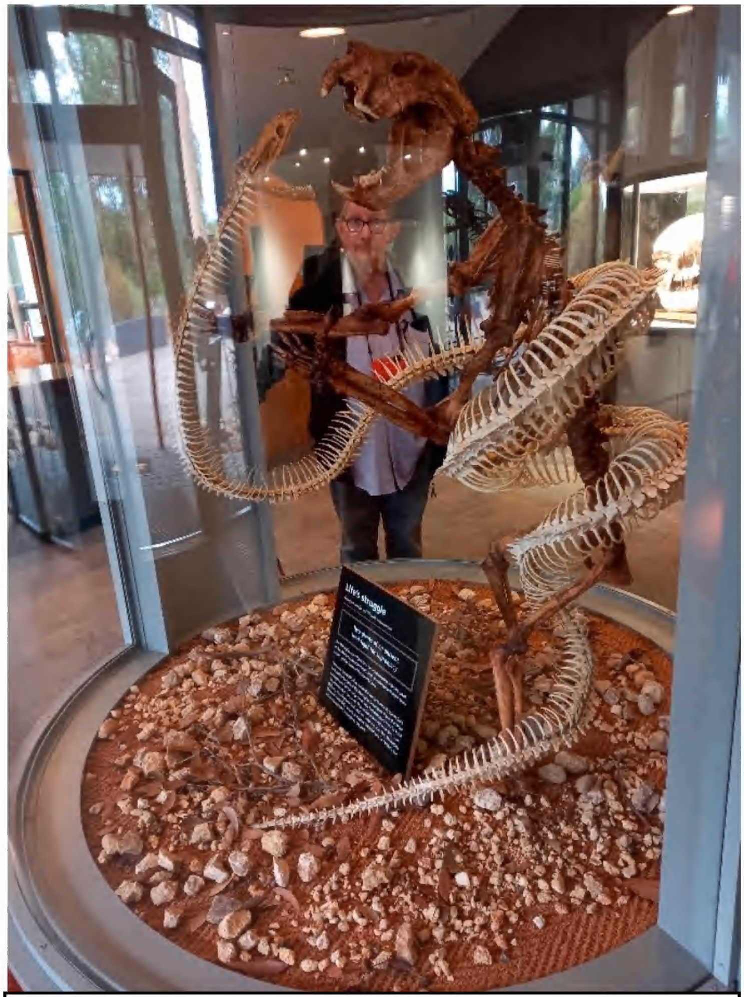


Fig 1.: The giant snake (*Wonambi naracoortensis)* and Marsupial Tiger (*Thylaceleo carnifex*) in mortal combat.

Naracoorte was our destination where we stayed in an Air BNB dubbed the "Bed in a Shed", a single room with bathroom attached but no cooking facilities. It was very comfortable and perfect just for two with lovely surroundings of native vegetation. Local birds visiting: Guinea Fowl (domestic), Crimson Rosella, Eastern Rosella, New Holland Honeyeaters, Common Bronzewing, Superb Blue Wren, Australian Magpie and Australian Raven.

A few hours of this first leg of the trip were spent at the Naracoorte Caves. The visitor centre from which tours of the caves depart is known as the "Wonambi Fossil Centre".

The first thing you see when entering the centre are the skeletons of a Marsupial Lion (*Thylaceleo carnifex*) and the enormous Madtsoiid snake, *Wonambi naracoortensis* from which the centre takes its name. The skeletal sculpture is displayed in such a dramatic pose, the two giants intertwined in a deadly embrace. The visitor notes explained the history of the caves among other things.

For 500,000 years, the caves at Naracoorte have acted as pitfall traps for unwary animals as well as reservoirs for fossil plants blown or washed in from the surface. Palaeontologists have been investigating the deposits for over 40 years, "unravelling their tantalising secrets". Many of the large animals found in the fossil deposits of Naracoorte became extinct around 50,000 years ago. Collectively, these animals are known as 'Megafauna'. The reasons for their extinction remain a topic of scientific debate. 50,000 years ago, the local animal community was "much more diverse than today".

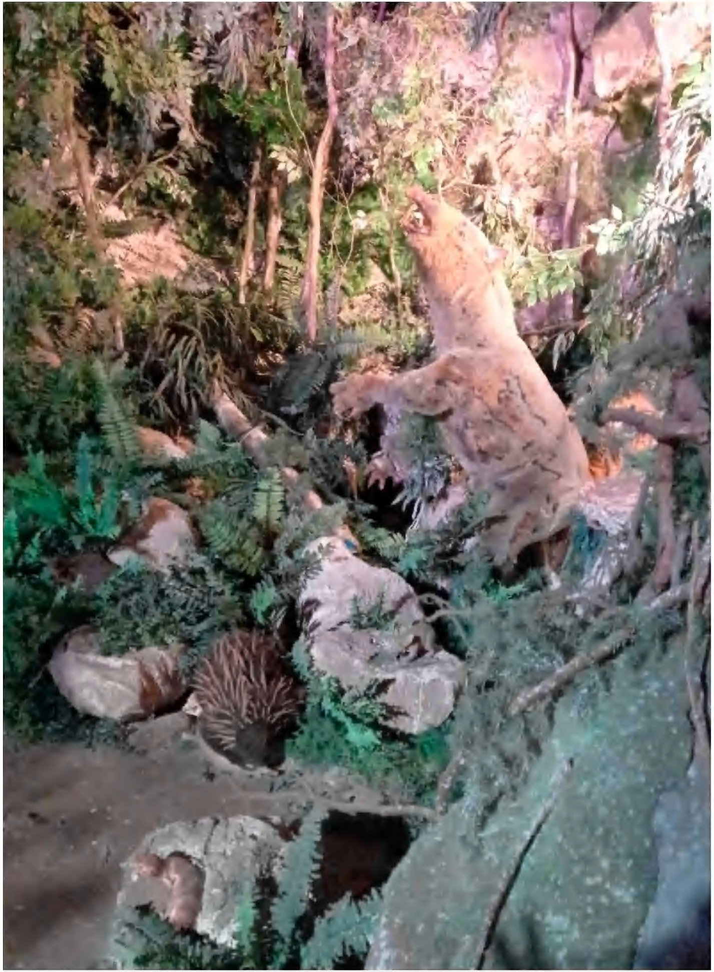


Fig. 2: Section of the 'Wonambi Diorama' showing Marsupial Tapir *Palorchestes azael*, Giant Echidna and the ancestor of our stumpy-tail lizard.

At lunch, we were treated to the antics of a number of quite brave little Superb Blue Wrens who have obviously adapted to the proximity of humans and their leftover pies and cakes.

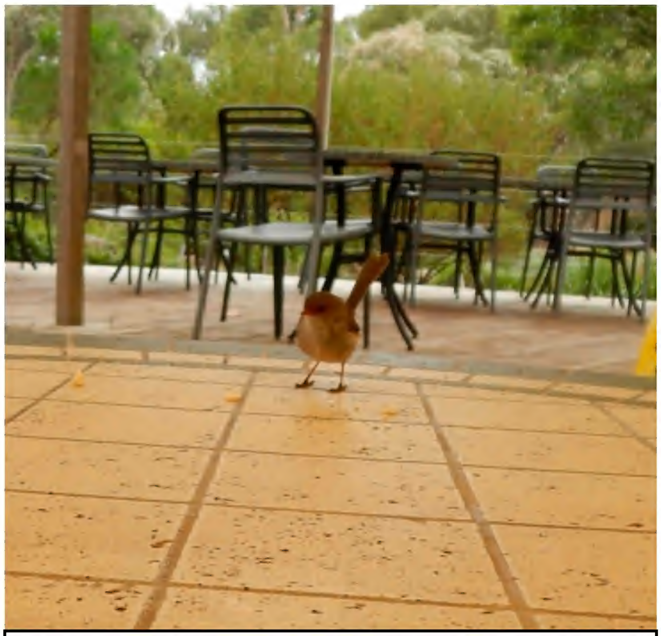


Fig. 3: Cheeky Blue Wrens know where to get a free feed!

The Wonambi Centre boasts a fabulous diorama that features an array of the animals from that time, some familiar, while others are more bizarre and strange. Of the megafauna, we saw life-sized models of the Marsupial Lion and the more familiar Tasmanian Tiger, plus on the forest floor, the massive *Diprotodon optatum*, the largest marsupial that ever lived, feeding on bulky plant material. The largest short-faced kangaroo, *Procotodon goliah* could reach foliage up to three metres high. It weighed as much as 200kg! Even bigger was the Marsupial Tapir *Palorchestes azael* that "used its enormous claws and small prehensile trunk to tear vegetation from the trees". All this proves beyond doubt what an amazing place Australia was and is.

The Naracoorte Caves formed around one million years ago within the Gambier Limestone, itself dated to around 37 million to 12 million years old and formed during the late Eocene or Miocene epochs. Overlying the limestone, a series of ancient sand dunes preserve records of the changing coastline over the past few million years. Over time, holes opened up in the limestone, connecting the caves to the land surface. Sand and soil was transported into these cave entrances by water and wind, forming deep layered deposits spanning at least the last 500,000 years of the Quaternary period (2.6 million years to present).

At the same time as the sediments were deposited, many types of animals lived in the landscape surrounding the caves. The remains of these animals accumulated in the caves and became buried and preserved in the sediment layers.

Some species, such as bats and possums, lived and died in the caves. Predators used the caves as roosts and dens, leaving behind the bones of their prey. Owls accumulated vast deposits of small vertebrates, such as the ones discovered by Woods in 1857.

Larger species fell victim to concealed cave entrances that acted as pitfall traps for the unwary. Kangaroos were particularly susceptible to entrapment, being fast-moving and active at night, dusk or dawn. Even the gigantic megafauna species succumbed to these traps.

With all of these ways for animals to accumulate, it is unsurprising that the caves preserve many deposits and tens of thousands of individual animals.

The first of the caves, Blanche Cave, was "discovered" in 1845 and more sites were found over the years. The large and productive Alexandra Cave was officially opened in 1909. Some caves were opened up by adventurers digging down and crawling through extraordinarily small holes. Not only have the caves yielded the usual stalactites, stalagmites and other formations, fossils found in many of them have added important data to the overall fossil record of South Australia, and of wider Australia.

Fig 4.: Some of the geological wonder of Naracoorte Caves

We don't know whether these creatures were aggressive by nature, but it is estimated that the bite force of the *Thylacoleo carnifex* was equal to that of the present African Lion, making it a formidable predator. On the other hand, the Diprotodon we can imagine as being similar in attitude to an elephant, mostly placid and gentle, until provoked. Most of these fossils lived in the period ranging from 2.8 million years ago to 11,700 thousand years ago. In addition, 31 bird species have been identified in the fossil record at Naracoorte.

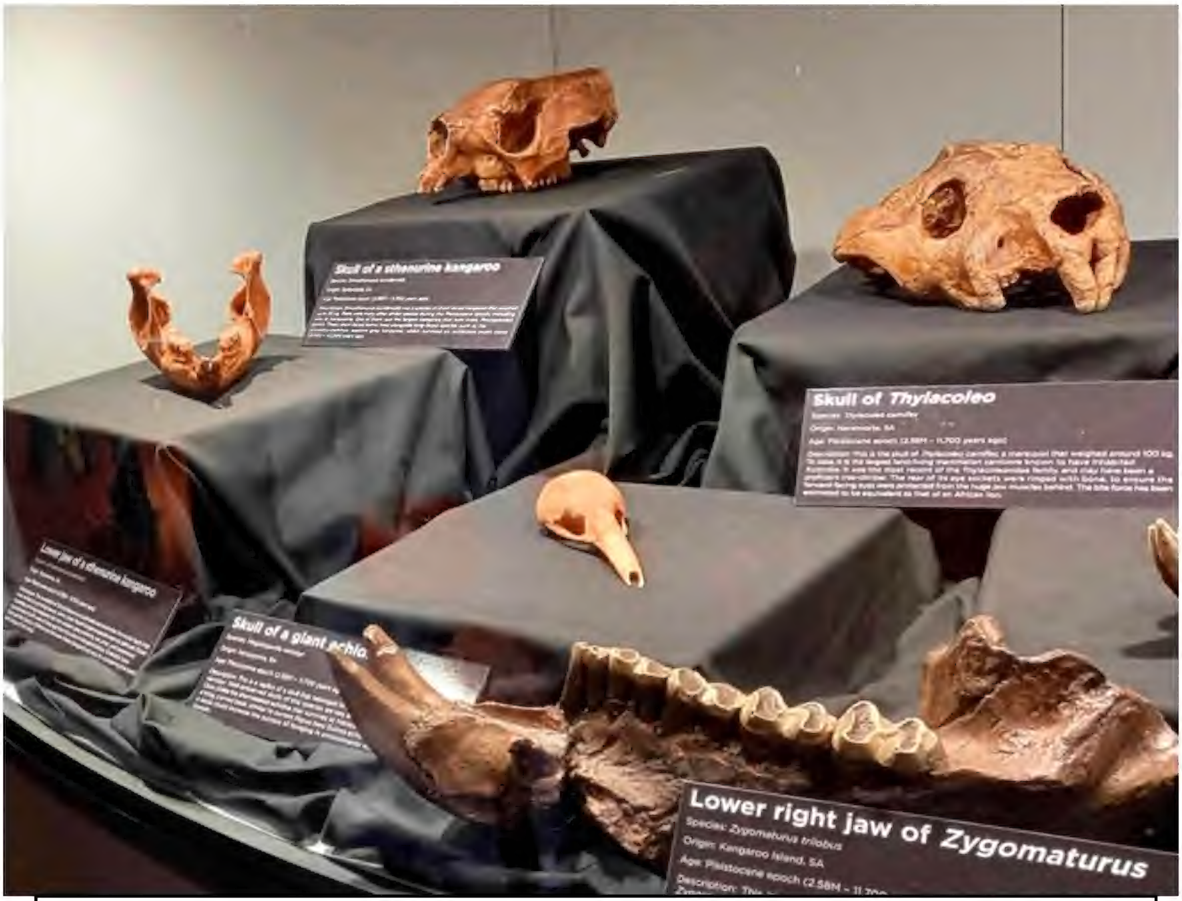

Skull of a sthenurine kangaroo
Skull of Thylacoleo
Lower jaw of a sthenurine kangaroo
Skull of a giant echid.
Lower right jaw of Zygomaturus
Species: Zygomaturus trilobus
Origin: Kangaroo Island, SA

Fig 5. Everything from the smallest marsupial mice through to giant echidnas and up to the enormous Marsupial Lion (*Thylacoleo carnifex*) and the giant Wombat known as Diprotodon (*Diprotodon optatum*) was on display (skull shown next page).

If you get a chance to visit Naracoorte, make sure you put a day aside to explore the caves and all they have to offer. From fossils to megafauna, from history to stalagmites and stalactites, it will make you appreciate nature so much more.

Bill Elder

Coming up sometime soon - Part 2: Kangaroo Island Itself

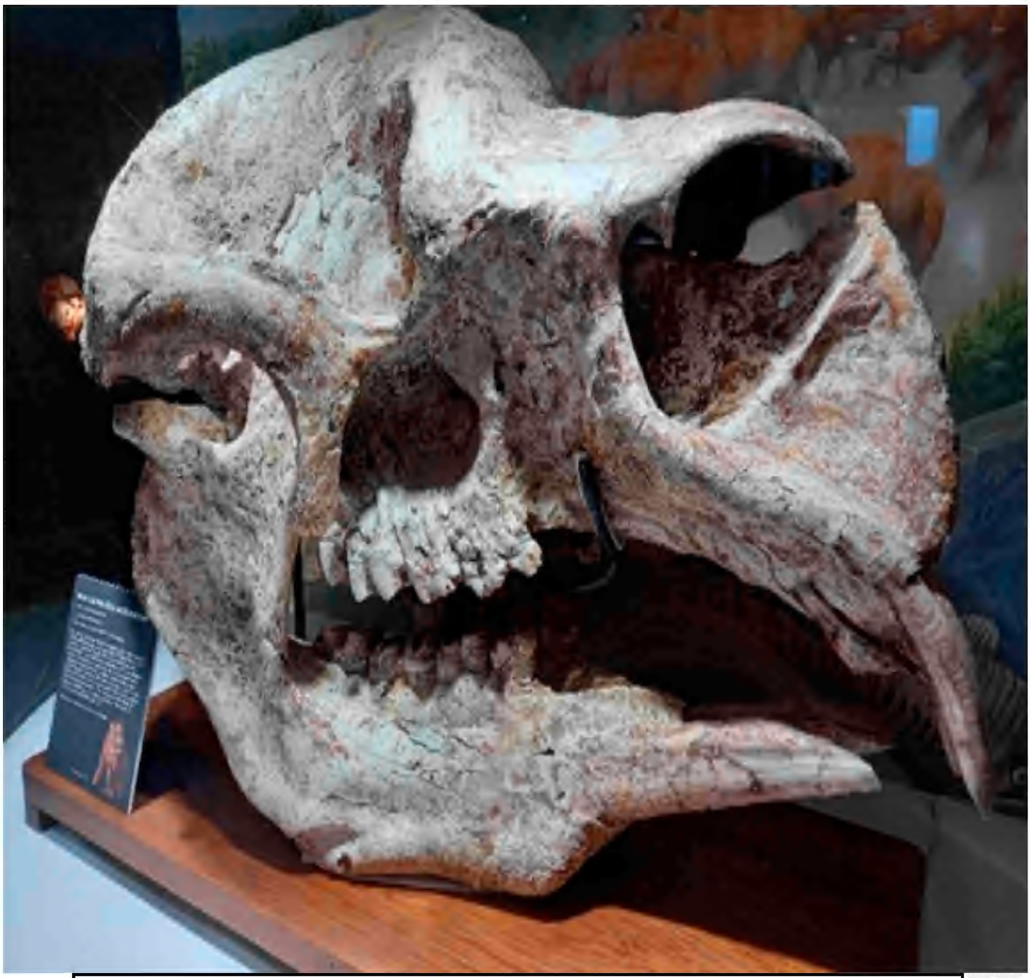
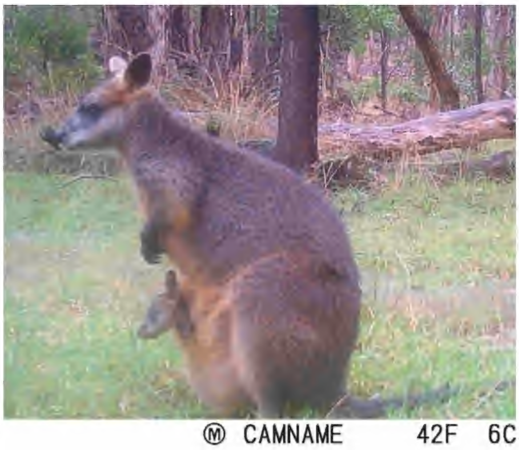


Fig 6. Skull and lower mandible of *Diprotodon optatum*

Candid camera

When checking his wildlife cameras recently, Graeme Lunt found these captures of a swamp wallaby, *Wallabia bicolor*, with a baby on board:



Highlights from the FNCB Club Meeting Minutes May 5th 2023 at 7.30 pm

Held in person and via Zoom: 18 members and two visitors attended in person, and eleven members via Zoom. Apologies: Mark Moravec, Elva Bird and John Mildren.

Welcome to new members Max Thompson and Mark Bevelander.

The FNCB has just renewed its membership with Environment Victoria ($25).

Treasurer's Report

Opening bal. (as at May 5):	$8,999.65
Income	$ 320.00
Expenses:	$ 246.20
Closing bal.:	$9,073.45

Emily, our representative on the General Committee for Field Naturalists' Club of Victoria, provided an update on the Australian Natural History Medallion. The Committee's first task is to put together the Awards Committee. If anyone can recommend someone with extensive natural history knowledge, preferably combined with an academic background, please contact Emily.

Discussed the future of the Club's library in the context of the lack of use it has been getting for years. Possible options discussed by the Committee were to put up the books for sale to members, donate them to an Op Shop or the like, leave them locked-up where they can't be accessed between meetings and no-one thinks to borrow them on Club Meeting nights. Emily was reluctant to see the collection split up due to its value as a comprehensive natural history reference library and offered to house it in the Environment Centre at Clarkesdale Bird Sanctuary. It could then be accessed by members during the month by arrangement and would be much more likely to be used. Part of this process would be to properly document the collection and provide the complete list of publications available to members. Shirley also suggested that a formal letter documenting the "loan" to Clarkesdale be drafted for Club records. Members are asked to consider the various options and let the Committee know if you think of any others. The library's future will again be considered at the July Club Meeting.

Gathering FNCB documents to provide to the Biodiversity Heritage Library for sharing online to the wider community has begun. So far Bill and Kathy have set up folders and begun uploading digital copies of newsletters they have. If you have been diligent in filing electronic copies of our newsletter over the last decade, and think you could help fill in gaps in the records, please contact Emily.

Emily reported the very sad news that Paul Hammond, son of FNCB Life Member Ken, had lost his battle with cancer a week previously. Our sincere condolences to Ken and his family.

Show & Tell/ Field Reports

- John M. saw a buff-banded rail eating worms in his vegie patch and a nearby nature strip.
- Val read part of a letter from life member Margaret Rotheram, recalling the total eclipse in 1976.
- Carol informed us of a great egret at Lake Wendouree for the last 3 weeks.
- Andy reported on a Button Wrinklewort (*Rutidosis leptorrhynchoides*) information day he attended recently.
- Peter D saw a Pacific gull repeatedly drop a shellfish onto rocks to open it at the Bay of Fires in Tasmania. Shell debris showed that this was a regular practice.
- Judith will make a presentation at the June Ballarat city council meeting on the Lake Wendouree lighting proposals.
- Andy reported that a recovery plan for the spiny riceflower is being assessed by Canberra's Threatened Species Scientific Committee.

Sunday 9th July field trip
Moss & lichen study: Surface Hill Historic Area.

9.30am sharp: convoy/ carpoolers will leave from the Federation University carpark, cnr Gillies & Gregory Sts, Wendouree.
Another meeting point is Surface Hill Historic Area, Surface Hill Road, Smythesdale, off the Smythesdale-Sebastopol Road at 10:00am.
We will have lunch next to the dam at the Historic Area at about 12:30pm.
Wear appropriate clothing and clean boots. You could bring a small mirror, a hand lens, a camera and moss, lichen and fungi field guides.

Excursions and Meetings

Fri July 7th Emily Noble Nature's carpet: mosses and lichens
Sun July 9th Emily Noble Mosses and lichens at Surface Hill historic area (See details on page 15)

Future events
Fri Aug 4th Nadiah Roslan, Australian Museum Research Institute
The Frog ID app: growing our knowledge of Aussie frogs
Sun Aug 6th Lal Lal Falls and Historic Area plus Moorabool Falls
Leader Andrew Arnold

Next Committee meeting Tuesday 25th July at 7.30 pm via zoom

SEANA Camp in Spring (October 20th-23rd). Will be based in Yarram and hosted jointly by the Latrobe Valley and Sale & District Field Naturalist Clubs.

Club meetings are normally held on 1st Friday of the month at 7.30 pm at the Federation Uni Gillies St Campus (corner of Gillies and Gregory Sts, Lake Wendouree),

Committee

President	Margaret Rich
Secretary	Emily Noble
Treasurer	Kathy Elder
Committee	Andy Arnold
	Val Hocking
	Graeme Lunt
	John Petheram
	Elva Bird
	Sheree Cartledge

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	Treasurer	Kathy Elder

Website: http://fieldnatballarat.wordpress.com
Club email: ballaratfnc@gmail.com
Meetings - in person and may continue to be held via Zoom.
Members will be kept informed of arrangements each month.

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